RF Exposure Report

Report No.: SA161031E01

FCC ID: 2ABTEIPSTB1200

Test Model: IPSTB1200

Received Date: Oct. 31, 2016

Test Date: Nov. 18, 2016

Issued Date: Nov. 24, 2016

Applicant: Verizon Online LLC

Address: 1300 I Street NW, Room 400W, Washington, District of Columbia, 20005, United State

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA161031E01	Original release.	Nov. 24, 2016

1 Certificate of Conformity

Product:	IPSTB1200 tv box
Brand:	Verizon
Test Model:	IPSTB1200
Sample Status:	ENGINEERING SAMPLE
Applicant:	Verizon Online LLC
Test Date:	Nov. 18, 2016
Standards:	FCC Part 2 (Section 2.1091)
	KDB 447498 D01 General RF Exposure Guidance v06
	IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** _____Nov. 24, 2016_____

Claire Kuan / Specialist

Approved by : _____ , **Date:** _____Nov. 24, 2016_____

May Chen / Manager

2   RF Exposure

2.1   Limits For Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

2.2   MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

2.3   Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

The antennas provided to the EUT, please refer to the following table:

			5GHz			
Antenna No	Brand	Antenna Net Gain(dBi)	Frequency range (GHz~GHz)	Antenna Type	Connector type	Cable Length (mm)
Antenna 1 (TX/RX)	WNC	4.1	5.15~5.25	Dipole	i-pex(MHF)	100
		4.84	5.25~5.35			
		5.4	5.47~5.725			
		5	5.725~5.85			
Antenna 2 (TX/RX)	WNC	3.39	5.15~5.25	Dipole	i-pex(MHF)	65
		3.41	5.25~5.35			
		3.75	5.47~5.725			
		3.92	5.725~5.85			
Antenna 3 (RX)	WNC	2.77	5.15~5.25	Dipole	i-pex(MHF)	116
		3.71	5.25~5.35			
		3.94	5.47~5.725			
		3.94	5.725~5.85			
Antenna 4 (RX)	WNC	6.54	5.15~5.25	PIFA	i-pex(MHF)	155.5
		5.49	5.25~5.35			
		4.8	5.47~5.725			
		4.78	5.725~5.85			

			Bluetooth		
Antenna No	Brand	Antenna Net Gain(dBi)	Frequency range (GHz~GHz)	Antenna Type	Connector type
Antenna 1	WNC	3.62	2.4~2.4835	Monopole	NA

The directional gain as below table:

Frequency	Max Gain (dBi)
5GHz	4.93

Note:
    1. Non-TxBF mode & TxBF mode antenna gain refer to KDB 662911 F 2) f) (ii)

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;
N_{SS} = the number of independent spatial streams of data;
N_{ANT} = the total number of antennas
$g_{j,k} = 10^{G_k/20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;
G_k is the gain in dBi of the kth antenna.

2.5   Calculation Result of Maximum Conducted Power

WLAN

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	248.906	4.93	20	0.15409	1
5260-5320	247.19	4.93	20	0.15302	1
5500-5720	248.022	4.93	20	0.15354	1
5745-5825	267.205	4.93	20	0.16541	1

NOTE:

WLAN: Directional gain = 4.93dBi

BT-EDR

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2400-2480	15.136	3.62	20	0.00693	1

BT-LE

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2402-2480	14.322	3.62	20	0.00656	1

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Simultaneously transmission condition.

Technology	
WLAN (5GHz)	Bluetooth

Therefore, the worst-case situation is 0.16541/1 + 0.00693/1 = 0.17234 which is less than "1".

This confirmed that the device comply with FCC 1.1310 MPE limit.

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